[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[Docket No. 30-10716; NRC-2020-0214]

Sigma-Aldrich Company, Fort Mims Site

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is considering amending the NRC's Materials License No. 24-16273-01, issued to Sigma-Aldrich Company (the licensee), for possession of byproduct material incident to radiological survey, storage of waste awaiting disposal, and decontamination, and remediation of the Fort Mims Site. The proposed amendment is to revise the decommissioning plan and terminate the license for the licensee's Fort Mims Site in Maryland Heights, Missouri. The NRC staff is issuing an environmental assessment (EA) and finding of no significant impact (FONSI) associated with the proposed action.

DATES: The EA and FONSI referenced in this document are available on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Please refer to Docket ID **NRC-2020-0214** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Website:** Go to https://www.regulations.gov and search for Docket ID **NRC-2020-0214**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at https://www.nrc.gov/reading-rm/adams.html. To begin the search, select "Begin Web-based ADAMS Search." For problems with ADAMS, please

contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to PDR.Resource@nrc.gov. For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the "Availability of Documents" section.

- **NRC's PDR:** You may examine and purchase copies of public documents, by appointment, at the NRC's PDR, Room P1 B35, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8:00 a.m. and 4:00 p.m. (ET), Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: George Alexander, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; telephone: 814-415-6755; email: George.Alexander@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

The NRC is considering issuance of an amendment of NRC Materials License 24-16273-01, issued to Sigma-Aldrich Company, for operation of the Fort Mims Site, located in Maryland Heights, Missouri. Therefore, as required by Part 51 of title 10 of the *Code of Federal Regulations* (10 CFR), "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," the NRC performed an EA. Based on the results of the EA that follows, the NRC has determined not to prepare an environmental impact statement for the license amendment and is issuing a FONSI.

The revised decommissioning plan was submitted to the NRC, by email dated August 22, 2019, and supplemented by a license termination request, dated April 27, 2020. On October 19, 2020, an application to amend Sigma-Aldrich's decommissioning plan and terminate NRC Materials License No. 24-16273-01 was submitted by NRC Form 313 "Application for Materials License." In its revised decommissioning plan, the licensee requests the option to perform direct dose

assessment of residual radioactivity, in addition to using derived concentration guideline levels (DCGLs), to demonstrate compliance with the license termination criteria in 10 CFR 20.1402, at the Fort Mims Site in Maryland Heights, Missouri. Under Sigma-Aldrich's license, the licensee shall conduct its decommissioning program in accordance with its decommissioning plan. The decommissioning plan dated October 22, 2008, states that the licensee will rely on the screening values in Appendix H of NRC's "Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria" (NUREG-1757), Vol. 2, Rev. 1 to demonstrate that the Fort Mims Site meets the release criteria for unrestricted use specified in 10 CFR 20.1402. By letter dated May 12, 2009, the NRC approved Sigma-Aldrich's decommissioning plan, which does not include the use of a dose assessment approach to demonstrate compliance. The licensee's commitments in its current decommissioning plan include remediating all residual activity to levels below approved screening values. The NRC guidance in NUREG-1757, Vol. 2, Rev. 1 allows for the use of either the DCGL or dose assessment approach to demonstrate compliance with 10 CFR 20 1402. NRC staff is reviewing the license amendment requests to revise the decommissioning plan and terminate the license concurrently because, if the staff approves the revised decommissioning plan and determines that the site meets the radiological criteria for unrestricted use under 10 CFR 20.1402, the license can be terminated without additional site characterization or soil remediation.

On December 21, 2020, the NRC published in the *Federal Register* (85 FR 83109), a notice of opportunity to provide comment, request a hearing, and petition for leave to intervene. No comments, requests, or petitions for leave were received.

II. Environmental Assessment

Description of the Proposed Action

The proposed action would approve two requests for license amendment. First, Sigma requested the option to perform direct dose assessment of residual radioactivity in addition to using DCGLs to demonstrate compliance with the radiological criteria for

unrestricted use in 10 CFR 20.1402 at the Fort Mims Site in Maryland Heights, Missouri. The NRC guidance in NUREG-1757, Vol. 2, Rev. 1, allows for the use of either the DCGL or dose assessment approach in demonstrating compliance with the license termination criteria.

Second, Sigma also requested license termination based on the site-specific dose assessment in the revised decommissioning plan and the site characterization data referenced in the letter dated April 27, 2020. Because, according to the licensee, the revised decommissioning plan and site characterization data indicate that the site meets the radiological criteria for unrestricted use in 10 CFR 20.1402, and, therefore, the license could be terminated without additional site characterization or soil remediation.

The proposed action is in accordance with the licensee's application dated August 22, 2019, as supplemented on April 27, 2020 and October 19, 2020.

Need for the Proposed Action

The proposed action is needed because Sigma was originally approved to use screening DCGL values to demonstrate that the entire site meets the radiological criteria for unrestricted use specified in 10 CFR 20.1402. Derived concentration guideline levels are intended to be conservative because they are designed to apply generically across a range of sites. However, during site characterization, Sigma identified areas of contamination exceeding the screening DCGL values. Instead of remediating the contaminated soil to less than the screening DCGL values, Sigma requested the use of a dose assessment approach in addition to DCGLs to demonstrate that the site meets the NRC criteria for unrestricted release. The NRC's proposed approval of Sigma's use of the dose assessment and DCGL approach instead of the DCGL screening values for the site would allow Sigma to use site-specific information in a more realistic manner. A license amendment is required for Sigma to change their approach from screening DCGLs to the use of a dose assessment approach in combination with DCGLs.

In addition to the request for use of the dose assessment approach in combination with DCGLs, Sigma also requested license termination, as they have

ceased principal activities at the Fort Mims Site. The NRC needs to fulfill its responsibilities under the Atomic Energy Act by making a decision on the proposed license termination request in a manner that would allow unrestricted use of the site while protecting public health and safety and the environment.

Environmental Impacts of the Proposed Action

The Fort Mims Site is located within the Lakeside Crossing Industrial Park, which is zoned for industrial and commercial use. The proposed action would authorize Sigma to adopt a dose assessment approach for certain areas of the site to demonstrate compliance with the radiological criteria for unrestricted use in 10 CFR 20.1402 and to terminate their license. Sigma would use the dose assessment approach in combination with DCGLs to evaluate the entire site. The dose assessment approach would result in a higher allowed level of residual radioactivity in certain areas of the site in comparison to the previously approved approach of using screening DCGL values. The use of screening DCGL values would require remediation of contaminated soils that are present in the areas described in Section 2 of this EA. That residual contamination affects the soil and groundwater resources at the Fort Mims Site. However, as explained in this notice, the radiological and nonradiological impacts from this residual contamination would not be significant and the site would meet the NRC's requirements for unrestricted use.

In the Safety Evaluation Report for the Fort Mims Site, NRC staff evaluated the dose impacts from the C-14 and H-3 contamination to potential future receptors. The staff reviewed the revised decommissioning plan, in which Sigma evaluated an industrial worker as the likely scenario for the Fort Mims Site. Sigma also evaluated a suburban resident scenario, which is plausible but less likely because the parcel is currently zoned for commercial and industrial use, which is the expected future use for the land as well. In the industrial worker scenario, the hypothetical worker is at the site for 8 hours per day, does not consume food grown or well water from the site, leaves the site after work, and does not work on weekends. In the second scenario, the hypothetical suburban

resident is at the site for 24 hours per day and has a vegetable garden but does not consume water from an onsite well because of the availability of a public water system. The maximum total radiological dose is projected to be 0.0002 millisievert/year (0.02 millirem/year) for the most likely scenario of industrial worker from exposure to site soils. The projected dose to the less likely, but plausible, scenario of suburban resident from exposure to site soils and food from the garden is 0.038 millisievert/year (3.8 mrem/year). If groundwater from an onsite well were consumed at the Fort Mims Site, the dose would be approximately 0.019 millisievert/year (1.9 millirem/year) based on: (1) the maximum observed groundwater concentrations of C-14 and H-3 in the groundwater, and (2) an ingestion rate of 1.4 liter/day (0.37 gal/day). All of these potential doses are significantly less than the NRC's unrestricted use criterion in 10 CFR 20.1402 of 0.25 millisievert/year (25 millirem/year).

Based on its review, the NRC staff determined that the radiological environmental impacts from the proposed action for the facility are bounded by the "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities" (NUREG-1496, Vol.1). Because of the localized nature of the impacts, the NRC staff does not expect any cumulative effects from the proposed action, when considered in combination with previously approved actions at the site and other past, present, or reasonably foreseeable actions. The total dose from the residual radioactivity at the site will continue to be less than the 0.25 mSv/y (25 mrem/y) criterion.

Environmental Impacts of the Alternatives to the Proposed Action

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). If Sigma is not authorized to use the dose assessment approach to demonstrate compliance with 10 CFR 20.1402, then Sigma would have to remove the residual radioactivity (by excavating soils) to reach levels that are below the previously approved DCGL values, in order to terminate their license. Approximately 860 m^3 (1,100 yd^3) of soils would need to be excavated.

Although the residual levels of radioactivity in the soils are well below the NRC's criterion for unrestricted release of the site, the excavation and removal of this material would create a potential for radiological environmental impacts. Radiological environmental impacts that could result from such remediation activities include inhalation and ingestion hazards to workers and the public. As described in the NUREG-1496 and NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," the excavation and removal of soil would also impact air quality (dust from excavation), increase noise (earthmoving equipment), and affect transportation. These impacts would not be significant but, taken together, the potential nonradiological and radiological impacts of the no-action alternative would be greater than the radiological and nonradiological impacts of leaving the soil in place.

Alternative Use of Resources

The proposed action does not affect any resource implications discussed in previous environmental reviews.

Agencies and Persons Consulted

The NRC staff consulted with the Missouri Department of Natural Resources regarding the environmental impact of the proposed action. By letter dated August 10, 2021, the State of Missouri provided several comments, and the NRC provided a response to those comments. Additionally, as described in the NRC's 2009 decommissioning plan approval EA, NRC staff previously consulted with the Missouri Department of Conservation, Wildlife Division, Endangered Species, on March 5, 2009 as required by Section 7 of the Endangered Species Act. The purpose of the call was to ensure that the licensing action is "not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of the habitat of such species." The Missouri Wildlife Division staff indicated that, based on their review and knowledge of current documents relating to possible endangered species, the decommissioning and release of the Sigma building located in Maryland Heights, Missouri would not affect any endangered species. NRC staff have

determined that the current proposed action of allowing dose modeling and license termination would not affect listed species or critical habitat, because there would be no additional disturbance of the site. Therefore, no additional consultation is required under Section 7 of the Endangered Species Act.

As described in the NRC's 2009 decommissioning plan approval EA, NRC staff previously consulted with the Missouri Department of Natural Resources, as required by Section 106 of the National Historic Preservation Act. By letter dated March 19, 2009 from the Department of Natural Resource's State Historic Preservation Office, Director, and Deputy State Historic Preservation Officer, the State indicated that "[w]e have reviewed the information provided concerning the above referenced project. Based on this review we concur that the Sigma Aldrich Chemical Company is not eligible for inclusion in the National Register of Historic Places. In our opinion, the property has been extensively disturbed, and there is little potential for the occurrence of archaeological sites. We concur that there will be no historic properties affected and we have no objection to the initiation of project activities." NRC staff have determined that the current proposed action of allowing dose modeling and license termination is not the type of activity that has potential to cause effects on historic properties, because there will be no additional disturbance of the site. Therefore, no additional consultation is required under Section 106 of the National Historic Preservation Act.

III. Finding of No Significant Impact

Per NRC guidance in NUREG-1757, Vol. 2, Rev. 1, the use of dose assessment in combination with DCGLs is an acceptable approach for demonstrating compliance with 10 CFR 20.1402. NRC staff also determined in its Safety Evaluation Report that the site meets the unrestricted use criterion in 10 CFR 20.1402 and that the license can be terminated.

On the basis of the EA, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

IV. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

DOCUMENT	ADAMS ACCESSION NO.
NUREG-1748, “Environmental Review Guidance for Licensing Actions Associated with NMSS Programs”	ML032540811
NUREG-1757, Vol. 2, Rev.1, “Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria”	ML063000252
Letter from Sigma-Aldrich, regarding Decommissioning Plan, dated October 22, 2008	ML083010187
Consultation with State of Missouri Department of Conservation, regarding Endangered Species, dated March 5, 2009	ML090640890
Letter from State of Missouri Department of Natural Resources, State Historic Preservation Officer, regarding Sigma-Aldrich, dated March 19, 2009	ML090860375
Federal Register Notice – Environmental Assessment for Sigma-Aldrich Company’s Decommissioning Plan License Amendment, dated April 28, 2009	ML091180638
NRC Approval of Sigma-Aldrich Company’s Fort Mims Facility Decommissioning Plan, dated May 12, 2009	ML091330309
Sigma-Aldrich Fort Mims Site Revised Decommissioning Plan, dated June 27, 2019	ML19273A160
Transmittal Email – Sigma-Aldrich Fort Mims Revised Decommissioning Plan, dated August 22, 2019	ML19273A163
Sigma-Aldrich Fort Mims Site Request for License Termination, dated April 27, 2020	ML20120A544
NUREG-1496, Vol.1, “Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities”	ML20149G542
Sigma-Aldrich Fort Mims Site Revised Decommissioning Plan: NRC Form 313, “Application for Materials License,” dated October 19, 2020	ML20294A191
Letter from the State of Missouri Department of Natural Resources, regarding Comments on the Draft Environmental Assessment for the Sigma-Aldrich Fort Mims Site, dated August 10, 2021	ML21258A322

Safety Evaluation Report of Revised Decommissioning Plan and License Termination Request for the Sigma-Aldrich Fort Mims Site	ML21300A384
NRC Response to State of Missouri Department of Natural Resources on Sigma-Aldrich Draft Environmental Assessment, dated October 12, 2021	ML21277A027

Dated: November 18, 2021.

For the Nuclear Regulatory Commission.

Randolph W. Von Till,
Chief, Uranium Recovery and Materials Decommissioning Branch, Division of Decommissioning, Uranium Recovery and Waste Programs, Office of Nuclear Material Safety and Safeguards.

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